

## ABSTRACT OF THE DISCLOSURE

Pursuant to one aspect of the invention, a prefilter module that incorporates an inverse filter is used in conjunction with an encoder. The inverse filter has an inverse frequency response of a frequency response of a filter that simulates speech having transmission path characteristics, such as telephone-channel bandwidth speech, and/or noisy speech. The inverse filter is used to compensate transmission path characteristics of an input signal. The inverse filter can be designed using several methods, such as, for example, an autoregressive model or a moving average model. Pursuant to a second aspect of the invention, a parameter preprocessor is used in conjunction with a decoder. The parameter preprocessor performs pitch rectification through use of a medium and linear filter, and updates spectral amplitudes and voicing parameter depending on the pitch rectification. The inverse filter and parameter preprocessor, used in conjunction with an encoder and decoder, respectively, improve signal processing and parameter estimation.